

## PATENT ABSTRACTS OF JAPAN

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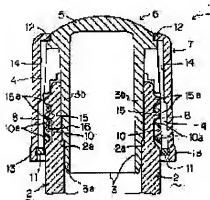
(54) STRUCTURE AND METHOD FOR PLUG CLOSING OF BOTTLE FOR CARBONATED BEVERAGE

(57)Abstract:

PURPOSE: To provide a plug closing structure and method for which a normal plug-driving machine can be used when the bottle mouth of a bottle for carbonated beverage is closed with a plug body, and at the same time, a sure plug closed state can be maintained, and the plug can be safely and easily removed.

CONSTITUTION: A multiple thread male screw 15 is provided on the external surface of a bottle mouth 2. In the meantime, an internal plug 6 made of a soft synthetic resin for which a cylindrical fitting part 3, which can be tightly fitted in the bottle mouth 2, and a skirt part 4 on the internal surface of which a multiple thread female screw 10, being fittable on the outside of the bottle mouth 2, is provided are integrally formed, is pressed to the bottle mouth 2, and the plug is driven in by making the multiple thread female screw 10 get over the multiple thread male screw 15. Then, a cylindrical external lid 7 made of a hard synthetic resin is pressed to the outside of the skirt part 4, and integrated to form a plug body 1. Then, by the ascent of the plug body 1 by a gas pressure in the bottle, the

multiple thread female screw 10 is engaged with the multiple thread male screw 15, and the plug is sealed. While the plug can be sealed by driving without performing a positioning, the plug is unsealed by loosening the screwing between the multiple thread male screw 15 and the multiple thread screw 10, and the plug body 1 does not unexpectedly jump out by the gas pressure, at the time of unsealing of the plug, and the structure and method are extremely safe.



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CLAIMS

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[Claim(s)]

[Claim 1]Closing structure which closes with a plug a bottle top of \*\* which accommodated a carbonated drink, comprising:

Tubed intussusceptum which can insert closely in the bottle top inside a plug which closes a bottle top while forming a multi-lugged bolt in a bottle top outside surface.

A multi-thread female screw which can be screwed in an inner surface which can fit into the bottle top outside at said multi-lugged bolt.

[Claim 2]Have the following and said bottle top is located between intussusceptum of said inside plug, and a skirt part. When it unifies by having capped so that said inside plug might be pressed to said bottle top and a multi-thread female screw might overcome a multi-lugged bolt, and also pressing and capping said outer cover to said inside plug and a plug, and nothing and a plug go up with gas pressure in \*\*. Closing structure which closes with a plug a bottle top of \*\* which accommodated a carbonated drink constituting so that said multi-thread female screw may be stopped to said multi-lugged bolt and it may close.

Tubed intussusceptum which can insert closely in the bottle top inside a plug which closes a bottle top while forming a multi-lugged bolt in a bottle top outside surface.

An inside plug made of soft synthetic resin which forms in one a skirt part which formed a multi-thread female screw which can be screwed in said multi-lugged bolt in an inner surface which can fit into the bottle top outside.

An outer cover which consists of hard material which engages with said skirt part and may be united with an inside plug.

[Claim 3]Closing structure of the carbonic acid beverage bottle according to claim 1 or 2, wherein an inside diameter of a bottle top is formed below in a size of an inside diameter of a portion which intussusceptum after capping in which a size of an inside diameter near the crowning is located below it contacts closely.

[Claim 4]While it maintains a close insertion state over a bottle top until a multi-thread female screw of a skirt part and a multi-lugged bolt of a bottle top screw intussusceptum certainly at least at the time of unstopping operation, a lower end of said multi-thread female screw, In a position of which a screwing state of a multi-thread female screw and said multi-lugged bolt is canceled, a close insertion state over said intussusceptum and said bottle top, Closing structure of the carbonic acid beverage bottle according to claim 1 or 2 providing in a vertical position which may rise said intussusceptum to a position which can be canceled easily at least.

[Claim 5]A closing method which closes with a plug a bottle top of \*\* which accommodated a carbonated drink, comprising:

Tubed intussusceptum which can be closely inserted in the bottle top inside to a bottle top which formed a multi-lugged bolt outside.

An inside plug made of soft synthetic resin which forms in one a skirt part which formed a multi-thread female screw which can be screwed in said multi-lugged bolt in an inner surface which can fit into the bottle top outside.

An outer cover which consists of hard material which engages with said skirt part and may be united with an inside plug.

[Translation done.]

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the closing structure and the closing method of closing the bottle top of carbonic acid beverage bottles, such as sparkling wine, with a plug. Using the plug which has the intussusceptum especially attached in the bottle top of glass \*\*, and a skirt part, more in details. The plug which formed in one the tubed intussusceptum which can be closely inserted in the bottle top inside, and the skirt part which formed the multi-thread female screw in the inner surface which can fit into the bottle top outside, or the inside plug which formed this in one with soft synthetic resin. They are as nothing as a plug, and a thing which caps and closes to the bottle top which formed the multi-lugged bolt which can screw in said multi-thread female screw outside the plug constituted in this way in the outer cover which consists of hard material which engages with the skirt part of an inside plug and may be unified.

[0002]

[Description of the Prior Art] As shown in drawing 6, the closing structure of the conventional carbonic acid beverage bottle the tubed inside plug 52 made of a synthetic resin which has the flange 51 in contact with bottle top 50 edge in the crowning. It attached in the bottle top 50 inside closely, and also [ the ] what was accomplished so that the skirt part 55 of this cap 53 corresponding to the jaw 54 annular bottom which put the metal caps 53 and was formed in the bottle top 50 outside from from might be fixed in total is common. And the fracture guide (not shown) provided in the flank is lengthened, after tearing and removing the cap 53, flange 51 periphery is gathered at the time of unstopping, and it draws out said inside plug 52.

[0003]

[Problem(s) to be Solved by the Invention] Generally, in manufacture of glass \*\*, shaping control is difficult and the inside of a bottle top tends to produce variation in the size of an inside diameter. Therefore, \*\* which closed by the conventional example mentioned above, When the inside plug 52 is being strongly attached in the bottle top 50 in unstopping, it is very hard to extract this, and the inside plug 52 may fall out suddenly with the pressure of carbonic acid in \*\* in the midst of having torn the cap 53, when the inside plug 52 is being conversely attached in the bottle top 50 loosely. And since it was metal with the thin cap 53 which the carbonated drink accommodated in \*\* overflowed, and was torn when it unstops suddenly in this way, there was inconvenience that there was a risk of damaging a hand etc. When the inside plug 52 is a product made of soft synthetic resin, there is also inconvenience attached by a change with time at the time of bottle top 50 of sticking and becoming difficult to extract.

[0004] There is a thing of a screw type to cancel the inconvenience of attaching an inside plug in a bottle top strongly, and becoming difficult to extract. However, with the composition of the conventional screw type, there is inconvenience that a capping machine special for closing is needed. Set a prescribed interval on a bottle top outside surface, provide a lock projection in it, provide the engagement part which engages with this lock projection at the skirt part of a plug, and alignment is carried out at the time of capping. While making each engagement part and each lock projection engaged and closing after capping, the composition which cancels the engagement state of said each engagement part and each lock projection in unstopping, and draws out a plug is also known. However, since it must draw out also in this conventional example, and it cannot respond to the variation in the inside diameter of a bottle top because of a formula and alignment must be carried out at the time of capping, there is inconvenience of being complicated.

[0005]The purpose of this invention is as follows.

Each inconvenience mentioned above is canceled and it can close using the usual capping machine. Maintain a closing state certainly and provide the closing structure and the closing method of a carbonic acid beverage bottle which can be unstopped safely and easily.

[0006]

[Means for Solving the Problem]In order to attain this purpose, closing structure concerning this invention, For example, a plug which closes the bottle top 2 while forming the multi-lugged bolt 15 in an outside surface of the bottle top 2 of glass \*\*, It becomes the tubed intussusceptum 3 which can be closely inserted in the bottle top 2 inside, and an inner surface which fits into the bottle top 2 outside from the skirt part 4 which formed the multi-thread female screw 10 which can be screwed in said multi-lugged bolt 15, said intussusceptum 3 -- said skirt part 4 being extensible to a diameter direction so that the multi-thread female screw 10 may overcome the multi-lugged bolt 15 of said bottle top 2 outside surface at the time of capping, and at least, while contacting parts with said bottle top 2 inside consist of soft materials, Where it is constituted so that it can fit into said bottle top 2 outside surface after capping, and the bottle top 2 is located between the intussusceptum 3 of said plug, and the skirt part 4, It caps so that a plug may be pressed to the bottle top 2 and the multi-thread female screw 10 may overcome the multi-lugged bolt 15, and a plug is gone up with gas pressure in \*\*, the multi-thread female screw 10 is stopped to the multi-lugged bolt 15, and it changes into a closing state.

[0007]The tubed intussusceptum 3 which can insert the plug 1 in the bottle top 2 inside closely, The inside plug 6 made of soft synthetic resin which formed in one the skirt part 4 which formed the multi-thread female screw 10 which can be screwed in said multi-lugged bolt 15 in an inner surface which fits into the bottle top 2 outside, Where it constituted from the outer cover 7 made of hard synthetic resin which engages with said skirt part 4 outside, and may be unified and the bottle top 2 is located between the intussusceptum 3 of said inside plug 6, and the skirt part 4, After capping so that the inside plug 6 may be pressed to the bottle top 2 and the multi-thread female screw 10 may overcome the multi-lugged bolt 15, It is good also as a closing state to unify by pressing and capping the outer cover 7 to the inside plug 6, go up the plug 1, and nothing and the plug 1 with gas pressure in \*\*, and stop the multi-thread female screw 10 to the multi-lugged bolt 15.

[0008]In order to engage with the inside plug 6 and to unite the outer cover 7 with it, two or more cuts 8 perpendicularly extended to said skirt part 4, while providing ..., an inner surface of the outer cover 7 -- this cut 8 -- the projected rim 14 which can be inserted in ... providing ... The cut 8 ... the projected rim 14 -- it is suitable if it depresses so that this outer cover 7 may be put on the skirt part 4 from the upper part as ... is made to agree, and both are unified.

[0009]An inside diameter of the bottle top 2 is preferred if the intussusceptum 3 after capping located below it forms a size of an inside diameter near the crowning below in a size of an inside diameter of a portion which contacts closely.

[0010]While it maintains a close insertion state over the bottle top 2 until the multi-thread female screw 10 of the skirt part 4 and the multi-lugged bolt 15 of the bottle top 2 screw the intussusceptum 3 certainly at least at the time of unstopping operation, A lower end of said multi-thread female screw 10 is a position of which a screwing state of the multi-thread female screw 10 and said multi-lugged bolt 15 is canceled, and if it forms said intussusceptum 3 in a vertical position which may rise to a position of which a close insertion state over said bottle top 2 of said intussusceptum 3 can be canceled easily at least, it is preferred.

[0011]A closing method concerning this invention receives the bottle top 2 of glass \*\* which formed the multi-lugged bolt 15 outside, for example, The inside plug 6 made of soft synthetic resin which forms in one the skirt part 4 which formed the multi-thread female screw 10 which can be screwed in said multi-lugged bolt 15 in the tubed intussusceptum 3 which can be closely inserted in the bottle top 2 inside, and an inner surface which can fit into the bottle top 2 outside, The plug 1 which consists of the outer cover 7 made of rigid resin which engages with said skirt part 4 and may be united with the inside plug 6, Cap and said bottle top 2 is located between the intussusceptum 3 of said inside plug 6, and the skirt part 4, After capping the state where said inside plug 6 was pressed to said bottle top 2, and the multi-thread female screw 10 overcame the multi-lugged bolt 15, It unifies by pressing and capping said outer cover 7 to said inside plug 6, and the plug 1, and nothing and this plug 1 are raised with gas pressure in \*\*, and the

multi-thread female screw 10 is stopped to the multi-lugged bolt 15, and it closes.

[0012]

[Function]What is necessary is just to rotate a plug, in order to unstop the bottle top 2 in a closing state. Then, the multi-thread female screw 10 is guided at the multi-lugged bolt 15 of the bottle top 2, and moves, screwing of the multi-thread female screw 10 and the multi-lugged bolt 15 solves, to the bottle top 2, a plug will be in a free state, the rise of it is attained, and the intussusceptum 3 separates from it easily from the bottle top 2 inside. moreover -- if it turns in the direction which grasps the outer cover 7 and loosens the screws 10 and 15 when the inside plug 6 and the outer cover 7 constitute the plug 1 -- the outer cover 7 and the inside plug 6 -- the projected rim 14 ... and the cut 8 -- since it is in the state where ... engaged and unified, the plug 1 rotates in the direction in one. Thus, if the plug 1 rotates, the multi-thread female screw 10 of the inside plug 6 is guided at the multi-lugged bolt 15 of the bottle top 2, and moves, screwing of the multi-thread female screw 10 and the multi-lugged bolt 15 solves, to the bottle top 2, the plug 1 will be in a free state, the rise of it will be attained, and the intussusceptum 3 of the inside plug 6 will separate from it easily from the bottle top 2 inside.

[0013]In a closing state, a plug or the inside plug 6, It is always energized outside (above) with the gas pressure of the carbonated drink in \*\*, and the multi-thread female screw 10, Usually, since it is in the screwing state which contacted the multi-lugged bolt 15, only by rotating a plug or the inside plug 6 easily and certainly, Said multi-thread female screw 10 can be guided at said multi-lugged bolt 15, needs to move, can cancel a screwing state easily and certainly, and does not need to apply the power in which especially a plug or the outer cover 7 is pulled up. Since the multi-thread female screw 10 and the multi-lugged bolt 15 are in a screwing state, the plug 1 does not jump out at the time of unstopping, without expecting with said gas pressure, and it is very safe.

[0014]The tubed intussusceptum 3 which can insert the plug 1 in the bottle top 2 inside closely. The inside plug 6 made of soft synthetic resin which formed in one the skirt part 4 which formed the multi-thread female screw 10 which can be screwed in said multi-lugged bolt 15 in the inner surface which fits into the bottle top 2 outside, When constituted from the outer cover 7 made of hard synthetic resin which engages with said skirt part 4 outside, and may be unified, if the skirt part 4 is extensible to a diameter direction at the time of capping, it is good, and since it is certainly held by the outer cover 7 after capping, it becomes easy to set it up of the construction material intensity of the skirt part 4.

[0015]Even if remodeling within the bottle top 2 by creep will arise when the intussusceptum 3 is made from soft synthetic resin etc. if the size of the inside diameter near the crowning of the bottle top 2 is formed below in the size of the inside diameter of the portion which the intussusceptum 3 after capping contacts, Since the inside diameter of the bottle top 2 is smaller near the crowning when the remodeling portion of the intussusceptum 3 goes up, an always close insertion state is maintained and a possibility of producing gas leakage is lost.

[0016]While it constitutes so that the close insertion state over the bottle top 2 may be maintained until the multi-thread female screw 10 of the skirt part 4 and the multi-lugged bolt 15 of the bottle top 2 screw the intussusceptum 3 certainly at least at the time of unstopping operation, The position of the lower end of said multi-thread female screw 10 in the position of which the screwing state of the multi-thread female screw 10 and said multi-lugged bolt 15 is canceled. Unstopping operation becomes easy while airtightness is certainly securable, if said intussusceptum 3 is formed in the vertical position which may rise to the position of which the close insertion state over said bottle top 2 of said intussusceptum 3 can be canceled easily at least.

[0017]

[Example]Below, the suitable example of this invention is described in detail based on drawing 1 - drawing 5 of an accompanying drawing. In here, the vertical section front view and drawing 2 which drawing 1 - drawing 4 show the 1st example, and drawing 1 shows a closing state turn off the front view of a bottle top, drawing 3 cuts a part, and the partial vertical section front view of the lacked inside plug and drawing 4 are the partial vertical section front views of the outer cover which cut and lacked the part. Drawing 5 is a front view showing the 2nd example about a bottle top.

[0018]First, the plug 1 is explained. As shown in drawing 1, drawing 3, and drawing 4, the plug 1 used for closing structure, The inside plug 6 made of soft synthetic resin which really forms the tubed intussusceptum 3 which can be closely inserted in the bottle top 2 inside, and which carried

out the opening of the lower end, and the skirt part 4 which fits into the bottle top 2 outside with the canopy section 5, Said skirt part 4 periphery consists of the outer covers 7 made of tubed hard synthetic resin which carry out a crown and in which the upper and lower ends carried out the opening.

[0019]The byway part 3a made as [ become / an outer diameter / gradually / towards a lower end edge / small ] is established in the lower part of the intussusceptum 3 of the plug 1. And the prescribed range portion above this byway part 3a serves as the seal part 3b which contacts the bottle top 2 closely, two or more cuts 8 perpendicularly extended applying the skirt part 4 of the plug 1 to the lower part from the upper part so that he can understand best at drawing 3 -- providing ... Each cut 8 ... the guide part 9 in which the upper bed portion of a between was formed to Yamagata ... is provided, the screw thread 10a of four sections prolonged respectively in parallel with the inner skin of said skirt part 4 lower part, and aslant -- forming the multi-thread female screw 10 which comprises ... This screw thread 10a ... the aforementioned cut 8 -- it is formed so that ... may be intersected. In addition, the projected part 11 formed so that the surrounding outside might be made to project a little is formed in the margo inferior of this skirt part 4.

[0020]As shown in drawing 1 and drawing 4, the outer cover 7 carries out swelling formation of the margo inferior 13 to the circumference outside while carrying out formed protruding of the opening edge 12 of the upper part inside a little so that it may engage with the step formed in canopy section 5 periphery.

applying to a center section from the upper part of the inner surface on the other hand -- the cut 8 of the above-mentioned skirt part 4 -- the projected rim 14 perpendicularly extended so that it may correspond to ... is formed.

[0021]Then, the bottle top 2 of \*\* which accommodates a carbonated drink is explained. the screw thread 15a of four sections extended respectively in parallel with the outside of the bottle top 2, and aslant as shown in drawing 2 -- the multi-thread female screw 10 which consists of ..., and the multi-lugged bolt 15 which can be screwed, [ form and ] The neck 16 which has an outer diameter smaller than the inside diameter of multi-thread female screw 10 portion to which said multi-thread female screw 10 formed in the skirt part 4 of the inside plug 6 is restored is formed in this multi-lugged bolt 15 bottom. Said screw thread 15a ... each lower end surface 15b ... is constituted so that it may be located on the straight line which is formed in the level surface, respectively and goes around bottle top 2 periphery.

[0022]As shown in drawing 1, the step 2a which divides the portion which the seal part 3b of the intussusceptum 3 contacts closely, and the portion corresponding to the byway part 3a up and down is formed in the bottle top 2. Although it is not clear in drawing 1, the size of the inside diameter near the crowning of the bottle top 2 is formed below in the size of the inside diameter of the portion which said seal part 3b located below it contacts closely.

[0023]And the intussusceptum 3 mentioned above is constituted so that the seal part 3b may maintain the close insertion state over the bottle top 2, until the multi-thread female screw 10 of the skirt part 4 and the multi-lugged bolt 15 of the bottle top 2 screw certainly at least at the time of unstoping operation. On the other hand, at the time of the completion of capping, the upper bed of said multi-thread female screw 10 is located below the lower end of said multi-lugged bolt 15, and is provided in the vertical position which both the screws 10 and 15 do not screw. If the lower end of said multi-thread female screw 10 becomes a position of which the screwing state of this multi-thread female screw 10 and said multi-lugged bolt 15 is canceled, it is established in the vertical position which may rise said intussusceptum 3 to the position of which the close insertion state over said bottle top 2 of said intussusceptum 3 can be canceled easily. The outer diameter of the neck 16 of the bottle top 2 which carries out a correspondence position is set as said multi-thread female screw 10 smaller than the inside diameter of said multi-thread female screw 10 at the time of the completion of capping.

[0024]In order to close the bottle top 2 with the plug 1 constituted as mentioned above, where the bottle top 2 is located between the intussusceptum 3 of the inside plug 6, and the skirt part 4, first, this inside plug 6 is pressed to the bottle top 2, and as the multi-thread female screw 10 overcomes the multi-lugged bolt 15, it caps it. the skirt part 4 comprises soft synthetic resin in the case of this capping -- and the cut 8 -- since ... is provided, it is easy to bend, and the multi-thread female screw 10 can overcome the multi-lugged bolt 15 smoothly And the multi-thread female screw 10 which overcame the multi-lugged bolt 15 is restored to the neck 16.

[0025]Then, the skirt part 4 of the inside plug 6 is pressed and capped with the outer cover 7 in the state where it covered from the upper part. this -- each projected rim 14 of said outer cover 7 ... each guide part 9 -- being led to ... each cut 8 -- while inserting in ..., the margo-inferior 13 inside of the outer cover 7 engages with the projected part 11 of skirt part 4 margo inferior, said inside plug 6 and said outer cover 7 unify, and the plug 1 is formed. Since the projected rim 14 of said outer cover 7 is led to said guide part 9 and is certainly inserted in the cut 8 in the case of this capping, it is not necessary to position said outer cover 7.

[0026]Subsequently, while the inside plug 6 goes up and the seal part 3b of the intussusceptum 3 contacts the bottle top 2 closely with the gas pressure of the carbonated drink accommodated in \*\*, it is the screw thread 10a of the multi-thread female screw 10... Screw thread [ in / in the upper surface / the multi-lugged bolt 15 ] 15a ... It stops on the undersurface and will be in a closing state. here -- The screw thread 10a of said multi-thread female screw 10 ... the screw thread [ in / in an upper bed / said multi-lugged bolt 15 ] 15a -- each level lower end surface 15b of ... when it stops to ..., the inside plug 6 will be in the state where it inserted in the bottle top 2 most deeply.

[0027]In the capping state of the plug 1, while the margo-inferior 13 inside of the outer cover 7 engages with the projected part 11 of the inside plug 6, Since it does not soften by heat treatment and the inside plug 6 is certainly held from the outside also when a carbonated drink needs to be heat-treated, since the outer cover 7 is a product made of hard synthetic resin, there is no fear of the plug 1 falling out from the bottle top 2 suddenly. It is the screw thread 10a of the multi-thread female screw 10 by the gas pressure generated from the carbonated drink in \*\*. The upper surface is the screw thread 15a of the multi-lugged bolt 15... It will be in the state where it was always pressed by the undersurface, and a positive closing state will be maintained.

[0028]Next, unstopping operation is explained. first -- if it turns in the direction which grasps the outer cover 7 and loosens the screws 10 and 15 -- the outer cover 7 and the inside plug 6 -- the projected rim 14 ... and the cut 8 -- since ... is in an engagement state, the plug 1 rotates in one. In the case of this rotating operation, since the outer cover 7 comprises hard synthetic resin, it is not distorted with grip and tends to carry out operation. Thus, a screwing state is canceled by this rotation, when the plug 1 is rotated and each screw threads 10a and 15a are in a screwing state. When the screw thread 10a is in a pressing state in the lower end surface 15b where the screw thread 15a is level, the multi-thread female screw 10 and the multi-lugged bolt 15 begin to screw certainly with rotation, and if it is made to rotate further, the screwing state of both the screws 10 and 15 will be canceled.

[0029]Thus, to the bottle top 2, the rise of the plug 1 of which the screwing state was canceled is attained, and it separates. Since the inside plug 6 is always energized outside (above) with the gas pressure of the carbonated drink from the inside of \*\* in the case of the rotatably operating of the plug 1, It is not necessary to apply the power in which especially the plug 1 is pulled up, and the plug 1 is only rotated. It not only can cancel easily the screwing state of said multi-thread female screw 10 and said multi-lugged bolt 15, but also when said both screws 10 and 15 cannot be found in a screwing state, it shifts to a screwing state easily and certainly, and this screwing state is canceled further, and it can unstop. And even if the screwing state of said both screws 10 and 15 is canceled, when the seal part 3b contacts closely to the bottle top 2 and is still maintaining airtightness, there is simultaneous with unstopping the sound of Pons with the gas pressure in \*\*.

[0030]Thus, if glass \*\* is closed by this example, the plug 1 will not expect and jump out with the gas pressure of the accommodated carbonated drink at the time of unstopping operation, very safe -- The screw thread 15a ... each lower end surface 15b ..., since it constitutes so that it may form in the level surface, respectively and may be located on a straight line, in the time of closing -- The screw thread 10a of the multi-thread female screw 10 ... an upper bed -- said lower end surface 15b -- when ... is contacted, it is possible to acquire the closing state which changed into the state where the inside plug 6 inserted most deeply in the bottle top 2, and was stabilized extremely.

[0031]Since the plug 1 was furthermore constituted from the inside plug 6 made of soft synthetic resin which formed the intussusceptum 3 and the skirt part 4 in one, and the outer cover 7 made of hard synthetic resin which engages with said skirt part 4 outside, and may be unified, The skirt part 4 is good if it is extensible to a diameter direction at the time of capping, and since it is certainly held by the outer cover 7 after capping, setting out of the construction material intensity of the skirt part 4 is easy for it. Since the size of the inside diameter near the crowning of the bottle top 2 was formed below in the size of the inside diameter of the portion which the seal part 3b of the intussusceptum 3 after capping contacts, Since the inside diameter of the bottle top 2 is



smaller near the crowning when the seal part 3b goes up even if remolding within the bottle top 2 by creep arises in the seal part 3b by having made the intussusceptum 3 the product made of soft synthetic resin, an always close insertion state is maintained and there is no possibility of producing gas leakage.

[0032]While it constitutes so that the close insertion state over the bottle top 2 may be maintained until the multi-thread female screw 10 of the skirt part 4 and the multi-lugged bolt 15 of the bottle top 2 screw the intussusceptum 3 certainly at least at the time of unstopping operation. The position of the lower end of said multi-thread female screw 10 in the position of which the screwing state of the multi-thread female screw 10 and said multi-lugged bolt 15 is canceled. Unstopping operation becomes easy while airtightness is certainly securable, since said intussusceptum 3 was formed in the vertical position which may rise to the position of which the close insertion state over said bottle top 2 of said intussusceptum 3 can be canceled easily at least.

[0033]Then, based on drawing 5, the 2nd example about the bottle top of this invention is described. That it is different from the 1st example that this 2nd example mentioned above, It is the point formed by the screw threads 21a and 21a of two sections which a lower end part extends horizontally the multi-lugged bolt 21 formed in the peripheral face of the bottle top 20 so that it may be located on the same level surface that goes around bottle top 20 periphery, and are aslant prolonged in parallel except for the horizontally extended parts 21b and 21b, and nothing and this lower end part. Thus, if the horizontally extended parts 21b and 21b are formed in the screw threads 21a and 21a, In a closing state, the same [ the skirt part which makes this and a pair ], the upper bed of the multi-thread female screw (not shown) of two sections responds to said horizontally extended parts 21b and 21b easily, the undersurface and the probability to stop become high, and there is an advantage of being easy to fix the depth which an inside plug inserts in the bottle top 20 at the time of closing.

[0034]Since it is a two-section screw, the rise angle from the horizontally extended parts 21b and 21b to the upper part becomes small. The shift to the upper part from said horizontally extended parts 21b and 21b of said multi-thread female screw, i.e., the shift to a screwing state from the locked state of said multi-thread female screw and said multi-lugged bolt 21, also has the advantage of becoming smoother. Since composition and an operation of the plug for blockading the composition of others of the bottle top 20, an operation, and the bottle top 20 are the same as that of the 1st example except for the point that the multi-thread female screw formed in the inner skin of a skirt part will be two sections, those explanation and graphic displays are omitted.

[0035]This invention is not limited to the example mentioned above at all, and the outer cover 7 may be replaced with the product made of hard synthetic resin, and may use metal things, and also it can also provide a canopy section in this outer cover 7 in one, for example. While extending the skirt part 4 to a diameter direction at the time of capping so that the multi-thread female screw 10 may overcome the multi-lugged bolt 15 of the bottle top 2, after capping. If it is set as suitable intensity from which said multi-thread female screw 10 stops certainly to said multi-lugged bolt 15, resists the gas pressure in \*\*, and does not separate from the bottle top 2, it is not necessary to form the outer cover 7, and it can also constitute a plug by the intussusceptum 3 and the skirt part 4, the screw thread 10a of the multi-thread female screw 10 -- the screw thread 15a of ... and the multi-lugged bolt 15 -- although ... should just be two sections and not only four sections but two or more sections, two sections - four sections are preferred for it. In order to make still easier unstopping of these multistart threads 10 and 15, the rib which contacts the screw thread 15a can also be provided in the skirt part 4.

[0036]

[Effect of the Invention]As mentioned above, since according to the closing structure and the closing method of this invention closing is performed without needing alignment by a capping method and unstopping is performed by a screw type, While being able to close using the usual capping machine and a positive closing state is maintainable, at the time of unstopping, a plug does not expect and jump out with the gas pressure of the contents of \*\*, and the effect that unstopping operation is easy is done so irrespective of the change with time of a plug very safely.

[0037]When the size of the inside diameter near the crowning of a bottle top is formed below in the size of the inside diameter of the portion which the intussusceptum after capping contacts according to the closing structure of this invention, Since the inside diameter of the bottle top is smaller near the crowning when the remolding portion of the intussusceptum goes up even if remolding within the bottle top by creep arises, when the intussusceptum is made from soft

synthetic resin etc., an always close insertion state is maintained and the effect that there is no possibility of producing gas leakage is done so.

[0038] While according to the closing structure of this invention it constitutes so that the close insertion state over a bottle top may be maintained until the multi-thread female screw of a skirt part and the multi-lugged bolt of a bottle top screw the intussusceptum of a plug certainly at least at the time of unstopping operation, The position of the lower end of said multi-thread female screw in the position of which the screwing state of a multi-thread female screw and said multi-lugged bolt is canceled, Unstopping operation becomes easier while being able to secure airtightness more certainly, when said intussusceptum is provided in the vertical position which may rise and is constituted to the position of which the close insertion state over said bottle top of said intussusceptum can be canceled easily at least.

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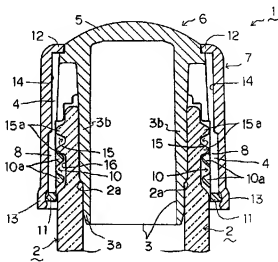
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(54)【発明の名称】 炭酸飲料用罐の閉栓構造及び閉栓方法

(57) 【要約】

【目的】炭酸飲料用罐の罐口を栓体で閉栓する際に、通常の打栓機を利用できるとともに、確実な閉栓状態を維持し、安全かつ簡単に閉栓できる。

【構成】 壕口2の外面に多条雄ネジ15を設ける一方、壕口2内面に緊密に嵌入し得る筒状の嵌め部3と壕口2外側に嵌合し得る多条雌ネジ10の内面に設けたカート部4とを一体的に形成した軟質合成樹脂製の中栓6を、壕口2に対して押圧して多条雌ネジ10と多条雄ネジ15を乗り越えさせて打栓したうえ、スカート部4外側に硬質合成樹脂製の筒状の蓋7を押圧し一体化して栓体1となし、栓体1が壕内のガス圧力で上昇することにより、多条雌ネジ10と多条雄ネジ15に停止して閉栓す。位置合わせをしないで打栓して閉栓させる一方、多条雄ネジ15と多条雌ネジ10の螺合を緩めるようにして閉栓するので、閉栓時に栓体1がガス圧力で予めず破りに飛散することがなく極めて安全である。



## 【特許請求の範囲】

【請求項1】 炭酸飲料を収容した罐の罐口を栓体で閉栓する閉栓構造において、罐口外面には多条雄ネジを設ける一方、罐口を閉栓する栓体は、罐口内側に緊密に嵌りし得る筒状の嵌入部と、罐口外側に嵌合し得る内面に前記多条雄ネジに螺合し得る多条雄ネジを設けたスカート部とからなり、前記嵌入部の少なくとも前記罐口内側との接触部分は軟質材からなり、前記スカート部は打栓時にはその多条雄ネジが前記罐口外面の多条雄ネジを乗り越えるように径方向に拡張可能で、打栓後には前記罐口外面に嵌合し得るよう構成され、前記栓体の嵌入部とスカート部間に前記罐口を位置させて、前記栓体を前記罐口に対して押圧して多条雄ネジが多条雄ネジを乗り越えるよう打栓したうえ、栓体が罐内のガス圧力で上昇することにより、前記多条雄ネジを前記多条雄ネジに係止して閉栓するよう構成したことを特徴とする炭酸飲料用罐の閉栓構造。

【請求項2】 炭酸飲料を収容した罐の罐口を栓体で閉栓する閉栓構造において、罐口外面には多条雄ネジを設ける一方、罐口を閉栓する栓体は、罐口内側に緊密に嵌りし得る筒状の嵌入部と、罐口外側に嵌合し得る内面に前記多条雄ネジに螺合し得る多条雄ネジを設けたスカート部とを、一体的に形成してなる軟質合成樹脂製の中栓と、前記スカート部に係合して中栓と一体化してなる硬質素材からなる外蓋とからなり、前記中栓の嵌入部とスカート部間に前記罐口を位置させて、前記中栓を前記罐口に対して押圧して多条雄ネジが多条雄ネジを乗り越えるよう打栓したうえ、前記外蓋を前記中栓に対して押圧して打栓することにより一体化して栓体となし、栓体が罐内のガス圧力で上昇することにより、前記多条雄ネジを前記多条雄ネジに係止して閉栓するよう構成したことを特徴とする炭酸飲料用罐の閉栓構造。

【請求項3】 罐口の内径は、頂部近傍の内径の大きさが、それより下に位置する打栓後の嵌入部が緊密に接触する部分の内径の大きさ以下に形成されていることを特徴とする請求項1または請求項2記載の炭酸飲料用罐の閉栓構造。

【請求項4】 嵌入部は、少なくとも開栓動作時にスカート部の多条雄ネジと罐口の多条雄ネジが確実に螺合するまでは罐口に対する緊密な嵌入状態を維持する一方、前記多条雄ネジの下端は、多条雄ネジと前記多条雄ネジとの嵌合状態が解除される位置で、前記嵌入部と前記罐口に対する緊密な嵌入状態を、少なくとも容易に解除できる位置まで前記嵌入部を上昇し得る垂直方向位置に設けられていることを特徴とする請求項1または請求項2記載の炭酸飲料用罐の閉栓構造。

【請求項5】 炭酸飲料を収容した罐の罐口を栓体で閉栓する閉栓方法において、外面に多条雄ネジを設けた罐口に対して、罐口内側に緊密に嵌りし得る筒状の嵌入部と、罐口外側に嵌合し得る内面に前記多条雄ネジに螺合

し得る多条雄ネジを設けたスカート部とを、一体的に形成してなる軟質合成樹脂製の中栓と、前記スカート部に係合して中栓と一体化し得る硬質素材からなる外蓋とからなる栓体を、打栓するものであり、前記中栓の嵌入部とスカート部間に前記罐口を位置させて、前記中栓を前記罐口に対して押圧して多条雄ネジが多条雄ネジを乗り越えた状態に打栓した後に、前記外蓋を前記中栓に対して押圧して打栓することにより一体化して栓体となし、この栓体を罐内のガス圧力により上昇させ、多条雄ネジを多条雄ネジに係止して閉栓することと特徴とする炭酸飲料用罐の閉栓方法。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】本発明は、スパークリングワイン等の炭酸飲料用罐の罐口を栓体で閉栓する閉栓構造及び閉栓方法に係り、特に、ガラス罐の罐口に嵌着する嵌入部とスカート部を有する栓体を用いたものであり、より詳細には、罐口内側に緊密に嵌りし得る筒状の嵌入部と罐口外側に嵌合し得る内面に多条雄ネジを設けたスカート部とを一体的に形成した栓体、あるいはこれを軟質合成樹脂で一体的に形成した中栓と、中栓のスカート部に係合して一体化し得る硬質素材からなる外蓋とで栓体となし、このように構成した栓体を、外面に前記多条雄ネジに螺合し得る多条雄ネジを設けた罐口に対し、打栓して閉栓するものである。

## 【0002】

【従来の技術】従来の炭酸飲料用罐の閉栓構造は、図6に示すように、頂部に、罐口50縁部に接触するフランジ51を有する筒状の合成樹脂製中栓52を、罐口50内側に緊密に嵌着したその上から、金属製キャップ53を被せて、罐口50外側に形成した環状の頸部54下面に対応する該キャップ53のスカート部55をさかめて固定するように成したものが一般的である。そして、開栓時は、その側部に設けた破断ガイド（図示せず）を引いてキャップ53を破いて取り除いた後、前記中栓52を、フランジ51周縁を掴む等して引き抜くのである。

## 【0003】

【発明が解決しようとする課題】一般に、ガラス罐の製造にあたって、罐口の内側は、成形コントロールが難しく内径の大きさにバラツキが生じ易い。したがって、上述した従来例によって閉栓した罐は、開栓にあたって、中栓52が罐口50にきつて嵌着していた場合、これがきわめて抜きにくく、逆に、中栓52が罐口50にゆるく嵌着していた場合は、キャップ53を破いている最中に、中栓52が罐内の炭酸の圧力によって不意に抜けしてしまうことがある。そして、このように不意に開栓すると、罐に収容した炭酸飲料が溢れだしたり、また破いたキャップ53が薄い金属であるため、手などを傷つける危険があるという不都合があった。また、中栓52が軟質合成樹脂製の場合には、経時的変化によって罐口50

ときつく密着してしまい、抜きにくくなるという不都合もある。

【0004】中栓が壙口にきつく嵌着して抜きにくくなるという不都合を解消するものとして、ネジ式のものがある。しかし、従来のネジ式の構成では閉栓のために特別なキャッピングマシンが必要となるという不都合がある。また、壙口外面に所定間隔をおいて係止突起を設け、栓体のスカート部にこの係止突起と係合する係合部を設け、打栓時位置合わせをして、打栓した後に各係合部と各係止突起とを係合させて閉栓する一方、開栓にあ

たっては前記各係合部と各係止突起との係合状態を解除して栓体を引き抜く構成も知られている。しかし、この従来例においても引抜き式のため壙口の内壁のパラツキには対応することができず、また、打栓時に位置合わせをしなければならぬので煩雑であるという不都合がある。

【0005】本発明は、上述した各不都合を解消し、通常

の打栓機を利用して閉栓できるとともに、確実に閉栓状態を維持し、安全かつ簡単に開栓できる炭酸飲料用壙の閉栓構造及び閉栓方法を提供することを目的とする。

【0006】

【課題を解決するための手段】この目的を達成するために、本発明に係る閉栓構造は、例えば、ガラス製壙の壙口2の外面に多条雄ネジ15を設ける一方、壙口2を開栓する栓体は、壙口2内側に緊密に嵌入し得る筒状の嵌入部3と、壙口2外側に嵌合する内面に前記多条雄ネジ15に螺合し得る多条雌ネジ10を設けたスカート部4からなり、前記嵌入部3の少なくとも前記壙口2内側との接触部分は軟質材からなる一方、前記スカート部4は打栓時にはその多条雌ネジ10が前記壙口2外面の多条雄ネジ15を乗り越えるように径方向に拡張可能で、打栓後は前記壙口2外面に嵌合し得るよう構成され、前記栓体の嵌入部3とスカート部4間に壙口2を位置させた状態で、栓体を壙口2に対して押圧して多条雌ネジ10が多条雄ネジ15を乗り越えるよう打栓し、栓体を壙内のガス圧力で上昇して多条雌ネジ10が多条雄ネジ15に係止して閉栓状態としたものである。

【0007】また、栓体1を、壙口2内側に緊密に嵌入し得る筒状の嵌入部3と、壙口2外側に嵌合する内面に前記多条雄ネジ15に螺合し得る多条雌ネジ10を設けたスカート部4とを一体的に形成した軟質合成樹脂製の中栓6と、前記スカート部4外側に係合して一体化し得る硬質合成樹脂製の外蓋7とから構成し、前記中栓6の嵌入部3とスカート部4間に壙口2を位置させた状態で、中栓6を壙口2に対して押圧して多条雌ネジ10が多条雄ネジ15を乗り越えるよう打栓したうえ、外蓋7を中栓6に対して押圧して打栓することにより一体化して栓体1となし、栓体1を壙内のガス圧力で上昇して多条雌ネジ10が多条雄ネジ15に係止して閉栓状態としてもよい。

【0008】なお、中栓6に外蓋7を係合して一体化するには、前記スカート部4に縦に伸びる複数の切込8・・・を設けるとともに、外蓋7の内面に該切込8・・・に挿入し得る突条14・・・を設け、切込8・・・に突条14・・・を合致させるようにして、スカート部4にその上方から該外蓋7を被せるように押し下げ両者を一体化すると好適である。

【0009】壙口2の内径は、頂部近傍の内径の大きさを、それより下に位置する打栓後の嵌入部3が緊密に接触する部分の内径の大きさ以下に形成すると好適である。

【0010】また、嵌入部3は、少なくとも開栓動作時にスカート部4の多条雌ネジ10と壙口2の多条雄ネジ15とが確実に螺合するまでは壙口2に対する緊密な嵌入状態を維持する一方、前記多条雌ネジ10の下端は、多条雌ネジ10と前記多条雄ネジ15との螺合状態が解除される位置で、前記嵌入部3の前記壙口2に対する緊密な嵌入状態を、少なくとも容易に解除できる位置まで前記嵌入部3を上昇し得る垂直方向位置に設けると好適である。

【0011】さらに、本発明に係る閉栓方法は、例えば、外面に多条雄ネジ15を設けたガラス製壙の壙口2に対して、壙口2内側に緊密に嵌入し得る筒状の嵌入部3と、壙口2外側に嵌合し得る内面に前記多条雄ネジ15に螺合し得る多条雌ネジ10を設けたスカート部4とを、一体的に形成した軟質合成樹脂製の中栓6と、前記スカート部4に係合して中栓6と一体化し得る硬質樹脂製の外蓋7とからなる栓体1を、打栓するものであり、前記中栓6の嵌入部3とスカート部4間に前記壙口2を位置させて、前記中栓6を前記壙口2に対して押圧して多条雌ネジ10が多条雄ネジ15を乗り越えた状態に打栓した後、前記外蓋7を前記中栓6に対して押圧して打栓することにより一体化して栓体1となし、この栓体1を壙内のガス圧力により上昇させ、多条雌ネジ10が多条雄ネジ15に係止して閉栓するものである。

【0012】

【作用】閉栓状態にある壙口2を開栓するには、栓体を回転すればよい。すると、多条雌ネジ10は壙口2の多条雄ネジ15に案内されて移動し、多条雌ネジ10と多条雄ネジ15の螺合が解け、壙口2に対して栓体はフリー状態となって上昇可能となり、嵌入部3が壙口2内側から容易に外れる。また、中栓6と外蓋7により栓体1を構成した場合には、外蓋7を握って、ネジ10、15を緩める方向に回すと、外蓋7と中栓6は突条14・・・と切込8・・・が係合して一体化した状態にあるから、栓体1は一体的に同方向に回転する。このように栓体1が回転すると、中栓6の多条雌ネジ10は壙口2の多条雄ネジ15に案内されて移動し、多条雌ネジ10と多条雄ネジ15の螺合が解け、壙口2に対して栓体1はフリー状態となって上昇可能となり、中栓6の嵌入部3

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が壕口2内側から容易に外れる。

【0013】閉栓状態においては、栓体あるいは中栓6は、壕内の炭酸飲料のガス圧力で常に外側（上側）に付勢されており、多条雄ネジ10は、通常、多条雄ネジ15に当接した螺合状態にあるので、栓体あるいは中栓6を回転するだけで容易かつ確実に、前記多条雄ネジ10は前記多条雄ネジ15に案内されて移動し、容易かつ確実に螺合状態を解除することができ、特に栓体あるいは外蓋7を引き上げるような力をかける必要はない。また、多条雄ネジ10と多条雄ネジ15が螺合状態にあるので、開栓時に栓体1が前記ガス圧力で予期せずに飛び出ることがなく極めて安全である。

【0014】また、栓体1を、壕口2内側に緊密に嵌入し得る筒状の嵌入部3と、壕口2外側に嵌合する内面に前記多条雄ネジ15に螺合し得る多条雄ネジ10を設けたスカート部4とを一体的に形成した軟質合成樹脂製の中栓6と、前記スカート部4外側に係合して一体化し得る硬質合成樹脂製の外蓋7とから構成した場合には、スカート部4は、打栓時に径方向に拡張可能であればよく、打栓後には外蓋7により確実に保持されるので、スカート部4の材質強度の設定が容易となる。

【0015】壕口2の頂部近傍の内径の大きさを、打栓後の嵌入部3が接触する部分の内径の大きき以下に形成すると、嵌入部3を軟質合成樹脂等で作った場合にクランプによる壕口2内での再成形が生じても、嵌入部3の再成形部分が上昇した時に、壕口2の内径は頂部近傍でより小さくなっているため、常に緊密な嵌入状態を維持し、ガス漏れを生ずる虞がなくなる。

【0016】また、嵌入部3を、少なくとも開栓動作時にスカート部4の多条雄ネジ10と壕口2の多条雄ネジ15とが確実に螺合するまでは壕口2に対する緊密な嵌入状態を維持するよう構成する一方、前記多条雄ネジ10の下端の位置を、多条雄ネジ10と前記多条雄ネジ15との螺合状態が解除される位置で、前記嵌入部3の前記壕口2に対する緊密な嵌入状態を、少なくとも容易に解除できる位置まで前記嵌入部3を上昇し得る垂直方向位置に設けると、確実に気密性を確保できるとともに、開栓動作が容易となる。

【0017】

【実施例】以下に、本発明の好適な実施例を添付図面の図1～図5に基いて詳細に説明する。ここにおいて、図1～図4は第1実施例を示し、図1は閉栓状態を示す縦断正面図、図2は壕口の正面図、図3は一部を切り欠いた中栓の部分縦断正面図、図4は一部を切り欠いた外蓋の部分縦断正面図である。また、図5は壕口に関する第2実施例を示す正面図である。

【0018】まず、栓体1について説明する。図1、図3及び図4に示したように、閉栓構造に用いる栓体1は、壕口2内側に緊密に嵌入し得る、下端を開口した筒状の嵌入部3、及び壕口2外側に嵌合するスカート部4

を、天蓋部5とともに一体形成した軟質合成樹脂製のの中栓6と、前記スカート部4外周を被覆する、上下端が開口した筒状の硬質合成樹脂製の外蓋7とから構成する。

【0019】栓体1の嵌入部3の下部には、下端縁に向けて徐々に外径が小さくなるようにした小径部位3aを設ける。そして、この小径部位3aよりも上の所定範囲部分が壕口2に緊密に接触するシール部3bとなる。図3で最もよく理解できるように、栓体1のスカート部4は、その上部から下部にかけて縦に伸びる複数の切込8・・・を設け、各切込8・・・間の上端部分を山形に形成したガイド部9・・・を設ける。さらに、前記スカート部4下部の内周面には、それぞれ平行で斜めに延びる4条のネジ山10a・・・から成る多条雄ネジ10を形成し、該ネジ山10a・・・は前記切込8・・・と交差するように形成される。加えて、該スカート部4の下縁には、周囲の外側に若干突出させるように形成した突部11を設ける。

【0020】図1及び図4に示したように、外蓋7は、その上側の開口部縁12を、天蓋部5周縁に形成した段部に係合するように、内側に若干突出形成するとともに、その下縁13を、周囲外側に膨出形成する一方、その内面の上部から中央部にかけて、前述のスカート部4の切込8・・・に対応するよう、縦に伸びる突条14・・・が形成してある。

【0021】続いて、炭酸飲料を収容する壕の壕口2について説明する。図2に示すように、壕口2の外側には、それぞれ平行で斜めに伸びる4条のネジ山15a・・・からなる多条雄ネジ10と螺合し得る多条雄ネジ15を形成し、該多条雄ネジ15の下側には、中栓6のスカート部4に設けた前記多条雄ネジ10が納まる、多条雄ネジ10部分の内径よりも小さい外径を有する首部16が設けられている。また、前記ネジ山15a・・・の各下端面15b・・・は、それぞれ水平面に形成され、かつ壕口2外周を一周する一直線上に位置するように構成する。

【0022】さらに、図1に示すように、壕口2には嵌入部3のシール部3bが緊密に接触する部分と、小径部位3aに対応する部分とを上下に区画する段部2aが設けられている。図1では明らかでないが、壕口2の頂部近傍の内径の大きさは、それより下に位置する前記シール部3bが緊密に接触する部分の内径の大きき以下に形成されている。

【0023】そして、上述した嵌入部3は、少なくとも開栓動作時にスカート部4の多条雄ネジ10と壕口2の多条雄ネジ15とが確実に螺合するまでは、そのシール部3bが壕口2に対する緊密な嵌入状態を維持するように構成されている。一方、前記多条雄ネジ10の上端は、打栓完了時に、前記多条雄ネジ15の下端よりも下に位置し、両ネジ10、15が螺合しない垂直方向位置

に設けられている。また、前記多条雄ネジ10の下端は、この多条雄ネジ10と前記多条雄ネジ15との螺合状態が解除される位置になると、前記嵌入部3の前記壕口2に対する緊密な嵌入状態を、容易に解除できる位置まで前記嵌入部3を上昇し得る垂直方向位置に設けられている。さらに、打栓完了時に、前記多条雄ネジ10に対応位置する壕口2の首部16の外径は、前記多条雄ネジ10の内径よりも小さく設定されている。

【0024】以上のように構成した栓体1で壕口2を開栓するには、まず、中栓6の嵌入部3とスカート部4間に壕口2を位置させた状態で、該中栓6を壕口2に対して押し、多条雄ネジ10が多条雄ネジ15を乗り越えるようにして打栓する。この打栓の際、スカート部4は、軟質合成樹脂で構成され、かつ切込8・・・が設けられているので、容易に、多条雄ネジ10が多条雄ネジ15を円滑に乗り越えることが可能である。そして、多条雄ネジ15を乗り越えた多条雄ネジ10は、首部16に納まる。

【0025】続いて、外蓋7を、中栓6のスカート部4に上方から被せた状態で押し、打栓する。これによって、前記外蓋7の各突条14・・・は、各ガイド部9・・・に導かれて、各切込8・・・に嵌入するとともに、スカート部4下縁の突条11に外蓋7の下縁13内側が係合し、前記中栓6と前記外蓋7とが一体化して栓体1を形成する。この打栓の際、前記外蓋7の突条14は前記ガイド部9に導かれて切込8に確実に嵌入するので、前記外蓋7を位置決めする必要はない。

【0026】次いで、壕内に収容した炭酸飲料のガス圧力により、中栓6が上昇し、嵌入部3のシール部3bが壕口2に緊密に接触するとともに、多条雄ネジ10のネジ山10a・・・上面が、多条雄ネジ15におけるネジ山15a・・・下面に係止して閉栓状態となる。ここで、前記多条雄ネジ10のネジ山10a・・・上端が、前記多条雄ネジ15におけるネジ山15a・・・の水平面各下端面15b・・・に係止した場合には、中栓6が壕口2に最も深く嵌入した状態となり、きわめて安定した閉栓状態を得ることが可能である。

【0027】栓体1の打栓状態においては、中栓6の突条11に外蓋7の下縁13内側が係合するとともに、外蓋7は硬質合成樹脂製であるので、炭酸飲料を加熱処理する必要がある場合にも、熱処理により軟化することがなく、確実に中栓6を外側から保持するので、栓体1が壕口2から不意に抜けるような心配はない。また、壕内の炭酸飲料から発生するガス圧力によって、多条雄ネジ10のネジ山10a・・・上面が、多条雄ネジ15のネジ山15a・・・下面に常に押し込まれた状態となり、確実な閉栓状態が維持される。

【0028】次に、開栓操作について説明する。まず、外蓋7を握って、ネジ山10、15を緩める方向に回すと、外蓋7と中栓6は突条14・・・と切込8・・・が係合状態にあるので一体的に栓体1が回転する。この回

転動作の際、外蓋7は硬質合成樹脂で構成されているので握力によって歪むことがなく操作がし易い。このように栓体1を回転すると、各ネジ山10a、15aが螺合状態にある場合には、この回転によって螺合状態が解除される。また、ネジ山10aがネジ山15aの水平面下端面15bに押し込まれた状態にある場合には、回転にともなって多条雄ネジ10と多条雄ネジ15が確実に螺合し始め、さらに回転させると両ネジ10、15の螺合状態が解除される。

【0029】このようにして、螺合状態が解除された栓体1は、壕口2に対して上昇可能となって外れる。なお、栓体1の回転操作の際、中栓6は壕内から炭酸飲料のガス圧力で常に外側（上側）に付勢されているので、特に栓体1を引き上げるような力をかける必要はなく、栓体1を回転するだけで、前記多条雄ネジ10と前記多条雄ネジ15の螺合状態を容易に解除できるだけでなく、前記両ネジ10、15が螺合状態にない場合にも容易、かつ確実に螺合状態へと移行し、さらにこの螺合状態が解除されて、開栓することができる。そして、前記両ネジ10、15の螺合状態が解除されても、シール部3bが壕口2に対して緊密に接触し、依然として気密性を保っている場合には、開栓と同時に壕内のガス圧力でボンという音がする。

【0030】このように本実施例によりガラス壺を開栓すると、開栓操作時に、収容している炭酸飲料のガス圧力で栓体1が予期せず飛び出ることがなく、きわめて安全であり、また、ネジ山15a・・・の各下端面15b・・・を、それぞれ水平面に形成し、かつ一直線に位置するように構成してあるので、閉栓時において、多条雄ネジ10のネジ山10a・・・上端が前記下端面15b・・・に当接した場合には、中栓6が壕口2内に最も深く嵌入した状態となり、きわめて安定した閉栓状態を得ることが可能である。

【0031】さらに栓体1を、嵌入部3とスカート部4とを一体的に形成した軟質合成樹脂製の中栓6と、前記スカート部4外側に係合して一体化し得る硬質合成樹脂製の外蓋7とから構成したので、スカート部4は、打栓時に径方向に拡張可能であればよく、打栓後には外蓋7により確実に保持されるので、スカート部4の材質強度の設定が容易である。また、壕口2の頂部近傍の内径の大きさを、打栓後の嵌入部3のシール部3bが接触する部分の内径の大きさ以下に形成したので、嵌入部3を軟質合成樹脂製にしたことにより、シール部3bにクランプによる壕口2内での再成形が生じても、シール部3bが上昇した時に、壕口2の内径は頂部近傍でより小さくなっているので、常に緊密な嵌入状態を維持し、ガス漏れを生ずる虞がない。

【0032】また、嵌入部3を、少なくとも開栓動作時にスカート部4の多条雄ネジ10と壕口2の多条雄ネジ15とが確実に螺合するまでは壕口2に対する緊密な嵌

入状態を維持するよう構成する一方、前記多条雄ネジ 10 の下端の位置を、多条雄ネジ 10 と前記多条雄ネジ 15 との螺合状態が解除される位置で、前記嵌入部 3 の前記埋込口 2 に対する緊密な嵌入状態を、少なくとも容易に解除できる位置まで前記嵌入部 3 を上昇し得る垂直方向位置に設けたので、確実に気密性を確保できるとともに、開栓動作が容易となる。

【0033】続いて、図 5 に基づき、本発明の埋込口に開する第 2 実施例を説明する。この第 2 実施例が上述した第 1 実施例と相違するのは、埋込口 20 の外周面に設けた多条雄ネジ 21 を、下端部は埋込口 20 外周を一周する同一水平面上に位置するよう水平に延出して水平延出部 21 b、21 b となし、この下端部を除いて平行に斜めに延びる 2 条のネジ山 21 a、21 a で形成した点である。このように、ネジ山 21 a、21 a に水平延出部 21 b、21 b を設けると、閉栓状態時に、これと対をなすスカート部の同じく 2 条の多条雄ネジ（図示せず）の上端が、前記水平延出部 21 b、21 b に対応し易くなり、その下面と係止する確率が高くなって、閉栓時に中栓が埋込口 20 に嵌入する深さを一定にし易いという利点がある。

【0034】また、2 条のネジなので水平延出部 21 b、21 b から上部への立ち上がり角度が小さくなり、前記多条雄ネジの前記水平延出部 21 b、21 b から上部への移行、すなわち、前記多条雄ネジと前記多条雄ネジ 21 との係止状態から螺合状態への移行がより円滑になるという利点もある。なお、埋込口 20 のその他の構成及び作用、並びに埋込口 20 を閉塞するための栓体の構成及び作用は、スカート部の内周面に設ける多条雄ネジが 2 条になる点を除いては、第 1 実施例と同一であるので、それらの説明及び図示は省略する。

【0035】なお、本発明は上述した実施例に何ら限定されるものではなく、例えば、外蓋 7 は硬質合成樹脂製に代えて金属製のものを用いてもよいほか、この外蓋 7 に天蓋部を一体的に設けることもできる。また、スカート部 4 を、打栓時には、その多条雄ネジ 10 が埋込口 20 の多条雄ネジ 15 を乗り越えるよう径方向に拡張する一方、打栓後には、前記多条雄ネジ 10 が前記多条雄ネジ 15 に確実に係止して、埋込口内のガス圧力に抗して埋込口 2 から外れないような、適切な強度に設定すれば、外蓋 7 は設ける必要はなく、嵌入部 3 とスカート部 4 により栓体を構成することもできる。多条雄ネジ 10 のネジ山 10 a・・・及び多条雄ネジ 15 のネジ山 15 a・・・は、2 条、4 条に限らず複数条であればよいが、2 条～4 条が好適である。さらに、これら多条雄ネジ 10、15 の閉栓をさらに容易にするために、スカート部 4 にネジ山 15 a に当接するリップを設けることもできる。

【0036】

【発明の効果】以上のように、本発明の閉栓構造及び閉

栓方法によれば、閉栓は打栓方式で位置合わせを必要とすることなく行い、閉栓はネジ式で行うので、通常の打栓機を用いて閉栓することができるとともに、確実に閉栓状態を維持できる一方、閉栓時に、埋込口内のガス圧力が栓体が予期せず飛び出ることがなくきわめて安全であり、また、栓体の経時的変化にかかわらず閉栓操作が簡単であるという効果を奏する。

【0037】また、本発明の閉栓構造によれば、埋込口の頂部近傍の内径の大きさを、打栓後の嵌入部が接触する部分の内径の大きさ以下に形成した場合には、嵌入部を軟質合成樹脂等で作った場合にクリープによる埋込口内の再成形が生じても、嵌入部の再成形部分が上昇した時に、埋込口の内径は頂部近傍でより小さくなっているの、常に緊密な嵌入状態を維持し、ガス漏れを生ずる虞がないという効果を奏する。

【0038】さらに、本発明の閉栓構造によれば、栓体の嵌入部を、少なくとも閉栓動作時にスカート部の多条雄ネジと埋込口の多条雄ネジとが確実に螺合するまでは埋込口に対する緊密な嵌入状態を維持するよう構成する一方、前記多条雄ネジの下端の位置を、多条雄ネジと前記多条雄ネジとの螺合状態が解除される位置で、前記嵌入部の前記埋込口に対する緊密な嵌入状態を、少なくとも容易に解除できる位置まで前記嵌入部を上昇し得る垂直方向位置に設けて構成した場合には、より確実に気密性を確保できるとともに、閉栓動作がより容易となる。

【図面の簡単な説明】

【図 1】第 1 実施例の閉栓状態を示す縦断正面図。

【図 2】埋込口の正面図。

【図 3】一部を切り欠いた中栓の部分縦断正面図。

【図 4】一部を切り欠いた外蓋の部分縦断正面図。

【図 5】第 2 実施例の埋込口の正面図。

【図 6】従来例の部分縦断正面図。

【符号の説明】

- |            |       |
|------------|-------|
| 1          | 栓体    |
| 2, 20      | 埋込口   |
| 3          | 嵌入部   |
| 4          | スカート部 |
| 6          | 中栓    |
| 7          | 外蓋    |
| 8          | 切込    |
| 9          | ガイド部  |
| 10         | 多条雄ネジ |
| 10 a       | ネジ山   |
| 14         | 突条    |
| 15, 21     | 多条雄ネジ |
| 15 a, 21 a | ネジ山   |
| 15 b       | 下端面   |
| 21 b       | 水平延出部 |



